

**DEPARTMENT OF TRANSPORTATION**

DIVISION OF ENGINEERING SERVICES

Office of Structural Materials

Quality Assurance and Source Inspection



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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 69.28**WELDING INSPECTION REPORT****Resident Engineer:** Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-007139**Date Inspected:** 20-May-2009**Project Name:** SAS Superstructure**OSM Arrival Time:** 1900**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 700**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China**CWI Name:** See Below**CWI Present:** Yes No**Inspected CWI report:** Yes No N/A**Rod Oven in Use:** Yes No N/A**Electrode to specification:** Yes No N/A**Weld Procedures Followed:** Yes No N/A**Qualified Welders:** Yes No N/A**Verified Joint Fit-up:** Yes No N/A**Approved Drawings:** Yes No N/A**Approved WPS:** Yes No N/A**Delayed / Cancelled:** Yes No N/A**Bridge No:** 34-0006**Component:** OBG and Tower Fabrication**Summary of Items Observed:**

CWI Inspectors: Mr. Wang Wen Zhong, Mr. Liu Yang,

On this date CALTRANS OSM Quality Assurance (QA) Inspector, Mr. Paul Dawson, arrived on site at the Zhenhua Port Machinery Company (ZPMC) facility at Changxing Island, in Shanghai, China, for the purpose of monitoring welding and fabrication of the San Francisco / Oakland Bay Bridge (SFOBB) components. The QA Inspector observed the following:

Prior to Caltrans QA Inspectors' concurring with issuance of OBG deck plate closed rib green tag releases a review of the ultrasonic inspection database is performed to verify all closed rib tack weld repair locations have been ultrasonically accepted. Today this QA Inspector, Mr. Paul Dawson, performed data entry of ultrasonic inspection information from the field generated Ultrasonic inspection data sheets onto the common drive computer database for the following OBG deck panel: DP284-001.

**OBG Assembly Yard**

The QA Inspector performed random visual inspections of the interior of the eastbound and westbound Orthotropic box girder (OBG) assemblies and observed there appears to be no ZPMC personnel performing welding. Note: There is a steady light rain falling most of the day and many of the interior steel surfaces of the OBG are wet. ZPMC has several people installing bolting in various bolted splice connections, but ZPMC does not appear to be performing final torquing of any of these bolts. At one of the connections in the East bound OBG the QA Inspector observed one ZPMC worker scraping the faying surface between the floor beam member and the

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## WELDING INSPECTION REPORT

( Continued Page 2 of 4 )

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splice plate to remove paint chips that had been created when the bolts had been inserted through the drilled holes. See the photo below that shows a ZPMC worker tightening bolts on the bolted connection at location 3AW. Items observed on this date appeared to generally comply with applicable contract documents.

Tower Bay 10

The QA Inspector observed ZPMC welder Mr. Yang Lei, stencil 046704 is using welding procedure specification WPS-B-T-4211-B-U3b-2 to complete shielded metal arc tack weld ESD1-FASA4-2A/E-4B. The QA Inspector observed that the base material where the tack weld was made had been preheated to above 180 degrees Celsius and a ZPMC QC Inspector is monitoring this welding. The QA Inspector measured a welding current of approximately 260 amps. Items observed by this QA Inspector appear to be progressing in compliance with project specifications.

The QA Inspector observed ZPMC welder Mr. Wang Gongzhi, stencil 050041 is using welding procedure specification WPS-B-T-2332-TC-P5-F to complete flux cored weld NSD1-FCSA3-1B/C-61. The QA Inspector observed that the base material where the welding was being made had been preheated with an electric heater and A ZPMC QC Inspector is monitoring this welding. The QA Inspector measured a welding current of approximately 305 amps, 29.7 volts and a travel speed of 340 mm per minute. Items observed on this date appeared to generally comply with applicable contract documents.

The QA Inspector observed ZPMC welder Mr. Dong Jiaguan, stencil 040345 is using welding procedure specification WPS-B-T-2332-TC-P5-F to complete flux cored weld NSD1-FCSA3-1B/C-62. The QA Inspector observed that the base material where the welding was being made had been preheated with an electric heater and A ZPMC QC Inspector is monitoring this welding. The QA Inspector measured a welding current of approximately 315 amps, 29.6 volts and a travel speed of 340 mm per minute. Items observed on this date appeared to generally comply with applicable contract documents.

This QA Inspector observed ZPMC welder Ms. Dong Yuqun, stencil 053116 is using flux cored welding process WPS-B-T-2231-TC-U5F to make stiffener plate welds on tower skin plate ED1-A27A/E-32. The QA Inspector observed ZPMC a Quality Control Inspector monitoring this welding. The QA Inspector measured a welding current of approximately 295 amps and 30.0 volts. Items observed on this date appeared to generally comply with applicable contract documents.

This QA Inspector observed ZPMC welder Ms. Dong Yumei, stencil 054069 is using flux cored welding process WPS-B-T-2231-TC-U5F to make stiffener plate welds on tower skin plate ED1-A27A/E-31. The QA Inspector observed ZPMC a Quality Control Inspector monitoring this welding. The QA Inspector measured a welding current of approximately 280 amps and 29.8 volts. Items observed on this date appeared to generally comply with applicable contract documents.

The QA Inspector observed ZPMC welder stencil 044550 is using welding procedure specification WPS-B-T-2221-U2b-S-2 to make submerged arc groove weld SSD1-FDSA4-1A/C-17. The QA Inspector observed ZPMC Quality Control personnel monitoring this welding and the QA Inspector measured a welding current of approximately 680 amps, 32.0 volts and a travel speed of approximately 630 mm per minute. The QA Inspector observed ZPMC had preheated the base material using electric heating elements. Items observed on this

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## WELDING INSPECTION REPORT

( Continued Page 3 of 4 )

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date appeared to generally comply with applicable contract documents.

The QA Inspector observed ZPMC welder Ms. Cao Xiachua, stencil 056975 is using welding procedure specification WPS-B-T-2221-U2b-S-2 to make submerged arc groove weld SSD1-FDSA4-1A/C-17. The QA Inspector observed ZPMC Quality Control personnel monitoring this welding and the QA Inspector measured a welding current of approximately 640 amps, 30.2 volts and a travel speed of approximately 630 mm per minute. The QA Inspector observed ZPMC had preheated the base material using electric heating elements. Items observed on this date appeared to generally comply with applicable contract documents.

This QA Inspector performed random visual inspection of the flux cored welding electrode storage location in near the back of heavy tower bay #11 where a small amount of rainwater had run inside the building. The QA Inspector observed ZPMC has three rolls of flux cored welding electrode which had been removed from the boxes and each of them had the air tight protective cover removed from the spool of electrode material. The QA Inspector informed ABF and QC personnel this type of electrode should remain in the hermetically sealed packaging until this material is ready for use, and this welding electrode was discarded. Note: AWS D1.5 paragraph 12.6.7.2 states: "Electrode Packaging. FCAW and GMAW (metal cored) electrodes shall be received in moisture-resistant packages that are undamaged. They shall be protected against contamination and injury during shipment and storage. Electrode packages shall remain effectively sealed against moisture until the electrode is required for use." ZPMC QC representative Mr. Zu Jin Long informed this QA Inspector the three spools of welding electrode will not be used for welding and they will be put into the trash container. See the photograph below for additional information.



### Summary of Conversations:

See above.

### Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Eric Tsang phone: 150-0042-2372 , who represents the Office of Structural Materials for your project.

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**Inspected By:** Dawson,Paul

Quality Assurance Inspector

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## WELDING INSPECTION REPORT

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**Reviewed By:** Clifford, William

QA Reviewer